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NOMENCLATURE

a : one-half the flat length

b : one-half the flat width

β : length-to-width ratio

D : flexural rigidity of a plate or shell; $D = Et^3/[12(1-\nu^2)]$

E : Young's modulus

γ : specific weight; $\gamma = \rho g$; $\gamma_{\text{slurry}} = 1.5\gamma_{\text{water}}$

k : nondimensionalized spring stiffness; $k = K_d a^4/D$

H : height

K : spring stiffness in units of force/length

K_d : distributed spring stiffness in units of force/length³

L_f : flat length

ρ : density; $\rho_{\text{slurry}} = 1.5\rho_{\text{water}}$

R : radius

σ_{11} : stress in the direction of the local x-axis

σ_{22} : stress in the direction of the local y-axis

t : plate or shell thickness

ν : Poisson's ratio

W_f : flat width

X : global X-axis; in the model, X is along the tube's length with X = 0 at the center of the tube

Y : global Y-axis; in the model, Y is along the tube's width with Y = 0 at the center of the tube

Z : global Z-axis; in the model, Z is in the vertical direction with Z = 0 at the center of the tube's bottom surface before deformation due to weight and pressure